PD-AAQ-351

Action Riz Sorgho
688-0256
End of Project Report

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I. Project Authorization

The goal of the Action Riz-Sorgho Project (688-0206) was to have an "increased standard of living and nutrition for the population of the 6th Region of Mali based on a stable food supply". The purpose was to "increase cereal production in the chronically deficit Gao area of the 6th Region of Mali and introduce the farmers in the area to the concept of technological development".

The project was authorized in 1976 with a LOP funding of $3,528,000. The original PACD was June 30, 1981. AA/AFR authorized a PP amendment on May 15, 1980 increasing funding by $350,000 and extending implementation through March 15, 1982. The evaluation conducted in April 1981 recommended that AID funding be continued for several years with substantial changes in the project. After a thorough review of the evaluation findings, the Mission began preliminary work on a Project Paper Amendment in September 1981. The amendment was submitted to AID/W for approval in March 1982. At the same time the Mission extended the PACD to June 30, 1982. AFR/PD/SWAP, for various reasons, verbally advised the Mission to withdraw this PP. The Mission complied with this advice and on August 27, 1982 approved a phase-out plan with an increase in LOP funding of $350,000 and a PACD of December 31, 1983.

II. Inputs

The major input to this project was the construction of a river flood control system along seasonally inundated ravine plains. The system was composed of large insubmersible dikes with gates and a network of delivery and drainage canals for a cost of $1.7 million plus $0.9 million for heavy equipment. Other inputs have included support of the project's operating expenses for $1.0 million (which includes previous years' support of a credit program), the procurement of vehicles and other commodities for $0.3 million, the provision of technical assistance in engineering, agronomy, and accounting for $0.2 million, the short-term training in management and extension of three staff members and other small construction for $0.1 million. The general budget breakdown is as follows:

Dike Construction	=	$2.6 million	=	62 per cent
Operating Expenses	=	$1.0 million	=	24 per cent
Commodities	=	$0.3 million	=	7 per cent
Technical Assistance	=	$0.2 million	=	5 per cent
Training and Small Construction	=	$0.1 million	=	2 per cent
Total		$4.2 million		100 per cent

III. Outputs

A. Dike Construction

The dike and canal system were constructed along the Niger River south of Gao near the towns of Tacharan and Gargouna. The total hectarage serviced by these works is 2,393 ha. (Tacharan has 1,860 arable ha. and Gargouna has 533 arable ha.).

The structures have enabled the control of three very important factors which have been restricting the production of rice and sorghum grown in these areas. The large uncontrolled volumes of river flood waters often drowned substantial parts of the rice crop. The second factor reducing production was a river fish which fed on the rice seedlings. The third factor was the rapid recession of flood waters which often did not allow the soils to absorb an adequate amount of water to nourish the sorghum crop which grows on residual moisture during the entire dry season.

The dikes and flood control gates enable control of the rate of rise of the flood waters. This measured delivery of water into the two flood plains prevents the drowning of rice seedlings. The second factor, the rice plant-eating fish, is controlled by the installation of heavy-duty wire screens at the flood gates which keep the fish from entering the plains. The third factor, rapidly receeding flood waters, is controlled by closing the flood control gates at the time when the river has reached its maximum height. The water retained behind the dikes is then released at a slow rate allowing the soils

to absorb as much water as possible for the sorghum crop. By the end of the dry season, the fish screens are removed and the flood control gates are fully opened and, with the help of the drainage canals, all water is evacuated from the plains. This complete evacuation rids the plains of any small fish which may have squeezed through the screens earlier in the season; thus, preventing them from maturing within the plains, as it is the mature fish that does most of the damage.

A benefit resulting from the construction of the large insubmersible dikes was a saving on the intensive labor required by farm families (men, women, and children) in the round-the-clock struggle to protect their crop from drowning and being eaten by the fish. The river flood often breached the small traditional barriers used to reduce the threat from the fish and the large volumes of uncontrolled flood waters. Losses resulting from such regular events required replanting in more marginal land, provided that seed was available for a second planting. Farmers are very pleased with the improved security which the large dikes provide and often state that more dikes should be constructed.

The dikes, flood control gates and screens have been in place since 1980. The canal system was not fully completed until the spring of 1983. These dikes have controlled four very important production constraints, but unpredictable quantities and distribution of rainfall to germinate the rice seed remains the major uncontrolled constraint. Insufficient rainfall can be overcome by the artificial application of water through a supplemental irrigation system (water-lifting or pumping). Although the project, mostly as a test, has purchased a few small diesel pumps and rents them to farmers during times of drought, the provision of this type of irrigation was not in the scope of the project paper. Interestingly enough, there is a big demand for the use of these pumps in spite of the fact that limited economic analysis done to date suggests that supplemental irrigation with small pumps in the area is not economically feasible.

Another factor that may influence yields is the scale of the flood control system. The perimeters enclosed by the dikes are so large, and hence the management demands so great that appropriately-timed water control has been difficult to obtain. The large scale has moved management far from the individual farmer.

B. Grain Production

The project has been providing extension and credit services to about 6,500 farmers on an area of about 11,000 arable hectares with a total population of 60,000. This includes the areas protected by the flood control systems in Tacharan and Gargouna which represent about 22% of the total arable hectarage.

Production statistics provided by the project can be summarized as follows:

Rice Production

	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84
Area planted(ha)	8,892	8,061	7,523	7,679	6,699	6,377
Area harvested (ha)	6,689	2,105	5,709	5,214	5,877	3,818
Production (T)	6,211	2,828	10,596	8,648	10,960	7,267
Yields (kg/ha)	929	1,343	1,856	1,659	1,865	1,903

Sorghum Production

	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84
Area planted(ha)	1,954	3,629	3,676	2,701	3,200	2,275
Area harvested (ha)	1,591	1,958	3,374	1,358	2,833	517
Production (T)	825	851	1,444	400	1,136	76
Yields (kg/ha)	519	435	428	295	401	147

The above figures have not been analyzed. Neither the sampling technique nor the standard deviation have been provided by the project. Thus, they should be treated with caution. The quality of production figures needs to be questioned especially when coming from such remote areas where little control is provided over those responsible for gathering data.

C. Credit Program

The project's credit program is made up of four different activities--the sale of rice seed, the sale of plows, the rental of irrigation pumps, and the sale of mopeds. All of these activities have generated revenues which have been deposited in the credit program's special bank account. These reflows have built the account to its current balance of about $42,000. These monies may be revolved by the project to procure commodities to be sold through the program.

The USAID suspended financial support for the procurement of additional inputs to be sold through the program because it lacked internal controls and written standardized procedures. However, through a recent contract with a local accounting firm, the project was able to establish a standardized set of procedures and internal controls for the credit program. A procedures manual was published and the new system will be implemented during the 1984 growing season.

1. Seed Sales

The thrust of the credit program is behind the sale of rice seed. The ever-present grain deficit in the Gao area forces the farm families to consume much of their seed set aside for the following year's growing season. Thus, the project attempted to create a program which could make seed available to farmers just before planting time.

The project would buy seed from two GRM parastatal seed producers--"Opération de Production de Semence" (OPS) in Ségou and "Opération Riz-Mopti" (ORM) in Mopti, and sell it on one year credit terms to be repaid in kind plus 15% interest. With the farmers' repayments, ARS was to build a revolving seed stock; thus,

reducing the need to purchase from OPS and ORM. Project reports show that over the years ARS has been able to supply and collect the following amounts of rice seed:

Year	Amount Sold	Interest	Amount to be collected	Amount Collected	Collection Rate
1978	89 tons	15%	102 tons	17 tons	17%
1979	108 tons	15%	124 tons	30 tons	24%
1980	109 tons	15%	125 tons	37 tons	30%
1981	66 tons	30%	86 tons	37 tons	43%
1982	53 tons	30%	69 tons	62 tons	90%
1983	52 tons	30%	68 tons	41 tons*	60%*

*1983 agricultural campaign was ongoing at the time this figure was provided. The final amount collected was not available.

The evaluation carried out in late 1980 criticized the project for its unacceptably low collection rate. This was followed by the project's enforcement of new credit policies including an increase in interest charges to 30%. These new policies enabled the project to attract better customers and discourage more marginal ones. Consequently recuperation has shown improvement in 1981, 82, and 83. Borrowers who do not pay the seed in kind three months after harvest are expected to repay its value in cash. The project's 1982 annual report indicates that 89% of all seed repayments were made in kind, and 11% were made in cash. The cash payments are deposited into the credit program's bank account or used to replenish the seed stock.

The major weakness of the seed program is that there is no insurance to cover more than one year's loss of the entire stock in case of a disaster. If rice production is greatly reduced by a drought, the farmers will have no surplus to repay the seed loans. The farm family may also not be able to repay entirely in cash as cash income from vegetable production and non-farm related work is precious during such hard times. The only reasonable solution to this problem is to reschedule the

the terms of the loan and hope to collect the following year. But in the meantime, the project needs to replenish its seed stock for the following season's needs. ARS would need $12,000 to $15,000 to replace a 52 ton seed stock. This would nearly deplete the $18,000 currently available in the credit program's bank account as approximately $24,000 of the account's $42,000 balance is to be used for other credit activities.

The project's Procurement Officer reports that ARS regularly receives credit requests from farmers of up to 250 tons of rice seed. Starting with the 1983 52 ton stock and a hypothetical collection rate of 90%, it would take nine years to build a stock large enough to supply the needs of this market. As it is unlikely that it will be able to develop the seed program to accommodate these needs, ARS can continue to provide seed in an effective way to a limited portion of the needy farmers only if it can maintain a collection rate greater than 77%. Theoretically, at 77% the project will be able to revolve 52 tons of seed without reducing the stock each year. (i.e. 52 tons x 130% principal and interest x 77% collection rate = 52 tons). This of course does not allow for losses from handling and drying of seed. A 52 ton revolving seed stock can supply 21% of the ARS market.

2. Plow sales

Because of the area's growing labor shortages and its increasing cost, rice farmers have become very interested in animal traction. For the last two years ARS has been receiving requests for plows from over 200 farmers, but because of weak internal controls, the project was discouraged from buying them for the credit program. However, in 1982 ARS bought ten plows to be sold on an experimental basis. The credit terms were for two instalments over two years including a 10% interest charge. These ten sales have been closed satisfactorily.

The project is currently planning to use credit program reflow monies to buy an additional 100 plows to be sold on similar terms.

The USAID has encouraged ARS to sell these plows at their real price which includes all transportation and handling costs plus at least 10% annual interest charges. All revenues from these credit sales are to be redeposited into the credit program's bank account to create a revolving fund.

3. Pump Rental

As noted in Section III.A of this report, adequate rain is required to germinate the rice crop and develop the seedlings until the river flood arrives. Supplemental pump irrigation is the only insurance against a shortfall in rain.

ARS purchased fifteen 4 to 6 horsepower diesel pumps which have been rented to farmers over the last few years. The farmers that have been able to benefit from this activity are few. At the moment there are only 15 pumps for the 6,500 farmers of the area. Originally these pumps were to provide supplemental irrigation to only 113 hectares of rice.

The pumps were to be rented on 24 hour periods and the rental charge to be based on the pump's amortization cost, fuel and oil consumption, and repair costs. Although the demand for supplemental irrigation is strong, ARS has not been able to determine the economic viability of the activity because its persistent cash flow problems did not allow for the purchase of spare parts to prevent the frequent and extended breakdowns.

The phase-out plan provided monies to repair the pumps and stock some spare parts so that the program could be continued under the guidelines provided in the recently published procedures manual.

4. Moped Sales

In 1980, the project bought 53 mopeds which were sold on credit terms to extension agents who needed them for conducting field work. The terms of the sale were that the cost of the moped plus

10% would be paid through monthly salary deductions for a period of two years. The revenues of this activity have been deposited to the credit program's bank account to create a revolving fund except for an amount of about $1,200 which remains uncollected from extension agents who have left the project. A recent inventory of project commodities revealed that only two of the 53 mopeds remain with extension agents. There are two theories behind the missing mopeds: the first is that extension agents earn a very low salary and whenever they are faced with serious cash flow problems they sell their mopeds. The second theory is that mopeds have a life expectancy of three years at best. In either case, it is reasonable to expect that by now nearly all the extension agents have disposed of their mopeds.

The project is currently planning to use credit account reflow monies to buy ten new mopeds to be sold under similar but more stringent terms as the previous batch to extension agents in key positions. The extension agent purchasing the moped will not be permitted to sell it nor will be permitted to leave the project without paying the balance due or returning the moped to the project without any type of reimbursement to the agent.

D. Operations

With regard to Action Riz-Sorgho's operations, there has been substantial progress made in its ability to manage the development program.

1. Management

There have been very few major implementation problems during the phase-out period. Generally, the project seems to be well managed by the GRM. An important accomplishment was the adoption of a new accounting system in 1982. This accounting system has given the project a good management tool which is being used satisfactorily. Because of this close control of the budget, the project has been able to eliminate its long-standing cash flow problem. This financial control was a critical element in the successful implementation of the phase-out.

Another basic problem is the lack of an experienced chief accountant which may limit the project's ability to handle larger volumes of work if the program is ever expanded. For the moment, the GRM is having a difficult time attracting experienced accountants to work in Gao. Also, the project staff lacks good water management expertise. The single engineer in the project is marginally acceptable.

2. Infrastructure

The project has been provided with some basic infrastructure. A headquarters office in Gao, field offices in seven sectors, housing for the Director, and a warehouse at the research station were all built at low cost with local materials.

The research station developed near Gao has a network of concrete canals, dikes, and flood control gates. However, research activities have been limited by the lack of irrigation pumps and cash flow problems at critical times. There were no research activities during the phase-out period. Three large irrigation pumps have recently been delivered to the station. The Ministry of Agriculture's research institution is seriously interested in securing funding to execute a research program at the station.

Among other things, vehicles and rental irrigation pumps have been repaired and spare parts have been stocked. Equipment which makes the project more efficient and effective has been purchased. Both headquarter's staff and extension agents have been given some means with which to work better than they would have otherwise.

IV. CONCLUSION

The seven years of USAID support of the Action Riz-Sorgho development program have been a period of time required to develop the project's critical infrastructure. The project is just getting started. The original objectives were neither achievable in the original five year project paper

plan nor in the seven years required to set up shop. Unfortunately, it is unlikely that USAID/Bamako will be able to take an active interest in future analysis of the real impact of our investments, especially those of the river flood control systems.

The decision has been made to discontinue financial support of ARS primarily because of its remoteness (about 700 miles from Bamako) and the Mission's shrinking availability of staff to provide adequate monitoring of the activities. Even though there is a paved road between Bamako and Gao, the area is still considered to be remote--a 15 hour drive each way.

For the moment, there is no indication of the intent of any donor to pick up financial support of Action Riz-Sorgho as an extension agency, but it seems that the French and the U.N. have picked up on a good idea and are commencing work to construct at least three additional flood control systems in the same area.

The Project Officer recommends that USAID/Bamako should not be discouraged with the slow and limited results of its interventions in the Gao area. Development is slow and we should not erase the plans already on our drawing board too quickly to start new and different activities every five or seven years. We should continue to build on what we have been working on and make appropriate changes as we go through the implementation stages.

clearances: A/ADO/CROPS:RLConley (draft)
ADO/ECON:LHall (draft)
PROG:RSimmons (draft)
GDO/ENG:HDaou (draft)
REDSO/ENG:GAnders (draft)
CONT:GJenkins (draft)
DD:JMAnderson
DIR:DMWilson

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